

## **Remarks**

This Amendment responds to the Office Action dated 16 October 2007. It is being filed between the third and fourth months following the mailing date of the Office Action. A Petition for a One-Month Extension of Time and the fees for the extension are enclosed herewith by way of credit-card authorization form.

This Amendment is accompanied by a Supplemental Information Disclosure Statement (IDS) along with credit-card authorization for the IDS fees.

The present amendment cancels one dependent claim and adds one new dependent claim. Accordingly, the total number of claims pending and the number of independent claims remains at the number previous paid for. No additional-claims fees are necessitated by this amendment.

### **For the Claims:**

Applicant originally submitted claims 1-45, of which claims 1, 21, and 34 were (and still are) independent claims. This Office Action rejected claims 1-16, 34-36, and 41-45, objected to claims 17-20 and 27-40 as being dependent upon rejected base claims, and allowed claims 21-33. Applicant hereby cancels claim 11, amends claim 1, retains claims 1-10 and 12-45 as originally filed, and adds new claim 46. Applicant respectfully requests reconsideration.

The Office Action rejected claims 1-16, 34-36, and 41-45 under 35 U.S.C 102(e) as being anticipated by Cova et al. (US

Pub. No. 2005/0157814, hereinafter "2005 Cova"). The present amendment amends claim 1 by incorporating the limitations from claim 11 therein and cancels claim 11. No amendment is made to claim 34. Thus, claim 1 now exhibits a claim scope previously found in claim 11, and the claim scope of claim 34 is unchanged.

Applicant disagrees with the rejection of claim 11, whose limitations now reside in independent claim 1, and claim 34 as being anticipated by 2005 Cova. Reconsideration is respectfully requested.

Applicant's claims should be found allowable because the rejection based on 2005 Cova is improper. 2005 Cova was filed on January 14, 2005, more than 11 months after the filing date of the present application. 2005 Cova is based on a provisional application (hereinafter "2004 Cova") that was filed January 21, 2004, which predates the filing date of the present application. A copy of 2004 Cova is included in an Appendix hereto. The disclosure of 2004 Cova is considerably different from 2005 Cova, and all differences from 2004 Cova have an effective filing date after applicant's filing date. It is the disclosure of 2004 Cova that is relevant to applicant's claims. The analysis of the Office Action based on 2005 Cova is improper because it is based, at least in part, on new material added after applicant's filing date. Reconsideration is respectfully requested.

Applicant's claims should also be found allowable because 2004 Cova fails to teach or suggest of the invention defined in claims 1 and 34.

Claim 1 includes the following limitations:

... wherein said complex-basis-function-data stream is responsive to  $X(n) \cdot |X(n)|^k$ , where  $X(n)$  represents

said complex-forward-data stream, and K is an integer greater than or equal to one;  
a filter coupled to said basis-function generator and configured to generate a complex-filtered-basis-function-data stream in response to said complex-basis-function-data stream; and

Claim 34 includes the following limitations:

generating a basis-function-data stream responsive to  $X(n) \cdot |X(n)|^K$ , where  $X(n)$  represents said forward-data stream, and K is an integer greater than or equal to one;  
filtering said basis-function-data stream to generate a filtered-basis-function-data stream; and

For the invention as defined in each of claims 1 and 34 the data stream which gets filtered is responsive to  $X(n) \cdot |X(n)|^K$ . 2004 Cova does not teach or suggest of such limitations, and instead teaches away from such limitations.

In discussing claims 11 and 34, the Office Action referred to the disclosure of 2005 Cova at page 6, paragraphs [0038-0039], element 420 in Figure 4, and page 7 paragraph [0053]. While the substance of Figs. 3 and 4 is similar between the 2004 Cova and 2005 Cova documents, the written description differs considerably. The sparse written discussion about Fig. 3 in 2004 Cova occupies a single paragraph extending from page 6 into page 7, and the sparse the written discussion about Fig. 4 in 2004 Cova occupies a single paragraph extending from page 7 onto page 8. Nowhere in Figs. 3-4, or on pages 6-8 of 2004 Cova is there any teaching or suggestion of the data stream which gets filtered being responsive to  $X(n) \cdot |X(n)|^K$ . Instead, 2004 Cova teaches an entirely different structure.

2004 Cova teaches that a digital envelope detector generates a magnitude signal labeled  $DPPDIn_{env}$  in Fig. 3. The  $DPPDIn_{env}$

signal is directly used in a "Nonlinear Static Comp" box and an "Envelope Dynamics Comp" box. The  $DPPDIn_{env}$  signal is raised to various powers prior to use in 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup> Order Reactive Comp boxes. Each of the "Nonlinear Static Comp" box, the Envelope Dynamics Comp" box, the 3<sup>rd</sup>, the 5<sup>th</sup>, and the 7<sup>th</sup> Order Reactive Comp boxes operates on a  $|X(n)|^k$  signal, using the terminology employed in applicants claims 1 and 34. Each of the Envelope Dynamics Comp box, the 3<sup>rd</sup>, the 5<sup>th</sup>, and the 7<sup>th</sup> Order Reactive Comp boxes, and the "Autoregressive Dynamics Compensation" Box implements a filter. But the filtering takes place on a magnitude signal raised to some power (i.e.,  $|X(n)|^k$ ). The data stream which gets filtered is not responsive to  $X(n) \cdot |X(n)|^k$  as required by claims 1 and 34, but only  $|X(n)|^k$ .

It is not until after filtering in the Autoregressive Dynamics Compensation box that the now-filtered magnitude signal is modulated with the baseband signal. This occurs in the box with the "X" which follows the "Autoregressive Dynamics Compensation" box (see also the sentence at lines 16-18 on page 7 of 2004 Cova). The result of that modulation process is  $X(n) \cdot F(|X(n)|^k)$ , where the "F(...)" notation reflects the filtering applied to the magnitude signal in 2004 Cova.

2004 Cova fails to teach that the data stream which gets filtered is responsive to  $X(n) \cdot |X(n)|^k$ , as applicant claims. Accordingly, claims 1 and 34 are not anticipated by 2004 Cova.

Nor would it be obvious to modify the teaching of 2004 Cova to more closely resemble that which applicant claims. 2004 Cova provides a teaching related to the subject matter recited in applicant's claims 1 and 34. But 2004 Cova teaches an entirely different structure which teaches away from that which is recited in claims 1 and 34. It is not obvious to modify the teaching of

2004 Cova in a way which effectively ignores an explicit teaching in a different direction.

Moreover, the difference between the limitations recited in claims 1 and 34 and the 2004 Cova teaching are substantial and not a mere design choice. The limitations recited in claims 1 and 34 result in an improvement over the 2004 Cova teaching. While the 2004 Cova structure may be suitable for addressing reactive memory effects associated with an RF amplifiers bias network, it suffers from inadequate nonlinear static compensation. The nonlinear static compensation results from nonlinearity in the amplifier itself. For example, nonlinear static distortion in and around the fundamental frequency of an amplified RF signal may result from intermodulation between 2<sup>nd</sup> and 3<sup>rd</sup> harmonics of the fundamental signal.

The filtering for nonlinear static compensation is desirably applied to compensate for linear distortions introduced in analog components between the digital circuits and the input of the amplifier itself. The signal components that receive these linear distortions in both applicant's transmitter and the 2004 Cova system are modulations between the baseband communication signal and various powers of signal magnitude, not various powers of signal magnitude alone. The modulation is a nonlinear process, so the filtering which occurs before modulation in 2004 Cova does not produce a linear effect after modulation. The improvement of applicant's invention as defined in claims 1 and 34 results because filtering occurs after modulation to better counter the linear distortions occurring downstream in analog components between the digital circuits and the input of the amplifier itself.

For the above-presented reasons, applicant believes that claims 1 and 34 are allowable over 2004 Cova. Reconsideration is respectfully requested.

Claims 2-10 and 12-16 were also rejected as being anticipated by 2005 Cova. As discussed above, 2004 Cova rather than 2005 Cova is believed to be the relevant reference. But claims 2-10 and 12-16 depend from claim 1 and are believed to be allowable over 2004 Cova at least for the above-discussed reasons due to their dependency from claim 1. Reconsideration of the rejection of claims 2-10 and 12-16 is respectfully requested.

Claims 17-20 were objected to as being dependent upon a rejected base claim. Claim 17-20 continue to depend from claim 1. But claim 1 is deemed allowable for the reasons set forth above. Reconsideration of the objection of claims 17-20 is respectfully requested.

Claims 21-33 were allowed. No changes or amendments have been made in claims 21-33. Accordingly, claims 21-33 remain in allowable shape.

Claims 35-36 and 41-45 were also rejected as being anticipated by 2005 Cova. As discussed above, 2004 Cova rather than 2005 Cova is believed to be the relevant reference. But claims 35-36 and 41-45 depend from claim 34 and are believed to be allowable over 2004 Cova at least for the above-discussed reasons due to their dependency from claim 34. Reconsideration of the rejection of claims 35-36 and 41-45 is respectfully requested.

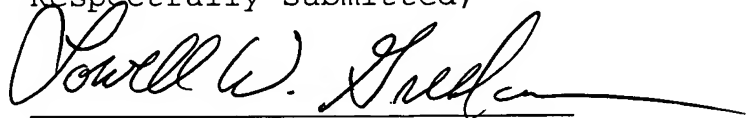
Claims 37-40 were objected to as being dependent upon a rejected base claim. Claim 37-40 continue to depend from claim

34. But claim 34 is deemed allowable for the reasons set forth above. Reconsideration of the objection of claims 37-40 is respectfully requested.

New claim 46 depends from claim 43, which in turn depends from claim 34. Claim 46 introduces limitations similar to those of claim 16 (which depends from claim 1), so support for the limitations can be found in the originally submitted claims. Claim 46 is believed to be allowable at least for the reasons set forth above in connection with the discussion of claim 34. Consideration of new claim 46 is respectfully requested.

Applicant believes that the foregoing amendments and remarks are fully responsive to the rejections and/or objections recited in the 16 October 2007 Office Action and that the present application is now in a condition for allowance. Accordingly, reconsideration of the present application is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, reading "Lowell W. Gresham", with a long horizontal flourish extending to the right.

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## **APPENDIX 1**

(Provisional Application S/N 60/537,937, filed 21 January 2004,  
upon which U.S. Pub. No. 2005/0157814 claims priority)



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## APPENDIX 1

(Provisional Application S/N 60/537,937, filed 21 January 2004,  
upon which U.S. Pub. No. 2005/0157814 claims priority)